

## SECTION 9A

### RECONSTRUCTION AND REHABILITATION PROJECTS

#### 1.9A.1 CONCRETE BRIDGE DECKS

In the processes that are involved in construction, rehabilitation, and reconstruction of concrete bridge decks, with special emphasis on overlay protective systems, the following terminology shall apply:

- (a) Construction means the initial construction of any specific bridge deck.
- (b) Maintenance means routine or incidental work necessary to keep a bridge deck functioning in a safe and efficient manner.
- (c) Overlay Protective System means a system used to protect bridge decks from deterioration induced by highway deicing chemicals, salt water, or other hostile environments.
- (d) Reconstruction means the restoration of the structural integrity of a concrete bridge deck by complete removal and replacement of the existing deteriorated bridge deck.
- (e) Rehabilitation means the work necessary to restore the structural integrity of portions of the original bridge deck as well as the installation of a deck protective system.

The following policies are established for all bridge decks to be constructed, rehabilitated or reconstructed with Federal-aid funds.

- (a) Standard Specifications. Criteria that is included in the NJDOT Specifications for Road and Bridge Construction shall be adhered to.
- (b) Overlay Protective System. When permitted, if a bridge deck is likely to be exposed to potentially damaging applications of deicing chemicals, salt water, or other hostile environment, a cost effective overlay protective system should be considered.
  - (1) The type of overlay protective system shall be based on the criteria established in the NJDOT Standard Specifications.
  - (2) The installation of an overlay protective system

shall be governed by criteria stated in Section 20 of this Manual.

(c) Eligible Work. Reconstruction and rehabilitation procedures necessary to assure acceptable performance of existing structures are set forth below and are eligible for Federal-aid participation from the appropriate category. Reconstruction and rehabilitation shall include all work required to assure satisfactory performance of the concrete deck, as well as supporting superstructure and substructure units.

(1) This may include items such as the removal of existing overlays, removal and replacement of all deteriorated components or the complete removal and replacement of the entire bridge deck if necessary.

(2) This work may also include repair or removal and replacement of deteriorated concrete curbs, sidewalks, parapets, as well as rail, deck joints, bearings, or similar incidental items which are associated with proper functional restoration of the structure.

(3) Safety improvements should be undertaken with the above described work when such improvements eliminate an established hazardous condition. Such safety improvements may include widening, elimination of hazardous walks and substandard safety hardware, removal of hazardous fixed objects or the installation of energy absorbing barrier system, and any other features that are consistent with current safety standards.

### **1.9A.2 FIELD CONDITION AND APPRAISAL SURVEY**

(a) Where an existing bridge or structure is to be widened, altered, reconstructed or rehabilitated, reference shall be made to the Evaluation Survey Report for the bridge. This report may be obtained on a loan basis upon written request to the Manager, Structural Evaluation/Bridge Management Unit.

(b) In conjunction with the review of the Report, a limited Field Condition Survey shall be made to update the original inspection report. The supplementary report shall include recommendations for remedial work together with the preliminary cost estimate. The Field Condition and Appraisal Survey shall be submitted prior to submission of the Preliminary Plans.

The Department will determine and authorize the extent of the work to be included in the Contract Plans.

- (c) Consistent with the policies and procedures established in Subsection 1.9A.1, safety improvements shall be considered for all reconstruction and rehabilitation projects. Recommendations shall be included in the Field Condition and Appraisal Survey (See Paragraph b). If not already included in the Scope of Work, the Department will determine and authorize the extent of work to be included in the Contract Plans.
- (d) The minimum vertical underclearance shall be measured and noted, together with its location, in the Field Condition and Appraisal Survey (See Paragraph b). If the underclearance is substandard, a commentary about the extent of work that is needed to improve the situation, together with a preliminary cost estimate, shall be included. The Department will determine if a detailed retrofit study is warranted.

### **1.9A.3 DECK SLAB RECONSTRUCTION (REPLACEMENT)**

Deck slab replacements shall be designed in accordance with Sections 3 and 20, and other applicable provisions of this Manual. The Structural Design Engineer should be aware that current NJDOT design criteria will produce deck slabs which are thicker than those designed under former requirements. This introduces additional Dead Load stresses in the existing stringers and/or beams. Secondary Dead Load design requirements are also a factor.

If the deck slab reconstruction work should impact bridge approach areas, the Design Engineer should refer to Subsection 1.20.8 of this Manual for guidance concerning provision of approach slabs.

All of these factors shall be considered in the design phase. If calculations indicate that the existing stringers and/or beams are significantly overstressed, the matter, together with recommendations, should be brought to the attention of the Manager, Bureau of Structural Engineering.

Special measures such as requiring the use of removable deck forms, retrofitting stringers with shear connectors, design criteria exceptions, etc. may be required.

Additionally, the height of shear connector studs on the existing stringers should be considered. Additional studs may have to be added in order to conform to the design criteria under Subsection 1.24.6.

### **1.9A.4 SPECIAL CONDITIONS**

- (a) Any changes in the condition of the bridge superstructure, current at the time of

the Final Plan Processing for the receipt of construction bids, which influence previous design decisions, should be considered. Special Provisions may be required in the Plans and Special Provisions for the following (if not already included in the contract documents):

- Construction Staging.
- Traffic controls and diversions.
- Authorized detours.
- Restricted working hours or days.
- Load restrictions for construction equipment.
- Posting for reduced speeds, substandard vertical underclearances and/or load capacities.

#### **1.9A.5 CLOSURE OF DRAWBRIDGES**

Contracts involving reconstruction or rehabilitation of drawbridges, where closures are expected, shall have suitable provisions written into the Special Provisions to conform to the regulations of the U.S. Coast Guard.

Requests for U.S. Coast Guard approval of proposed closures shall be channeled through the Manager, Bureau of Structural Engineering. Approval shall be received prior to advertising the contract for bids.